Asia-Pacific
Economic Cooperation

2005/STAR/019
Maritime Security Panel 3

Possible Ways of Cooperation to Protect Sea Lines of Communications (SLOC): The Marine Electronic Highway Project in the Straits of Malacca and Singapore

Submitted by: IMO

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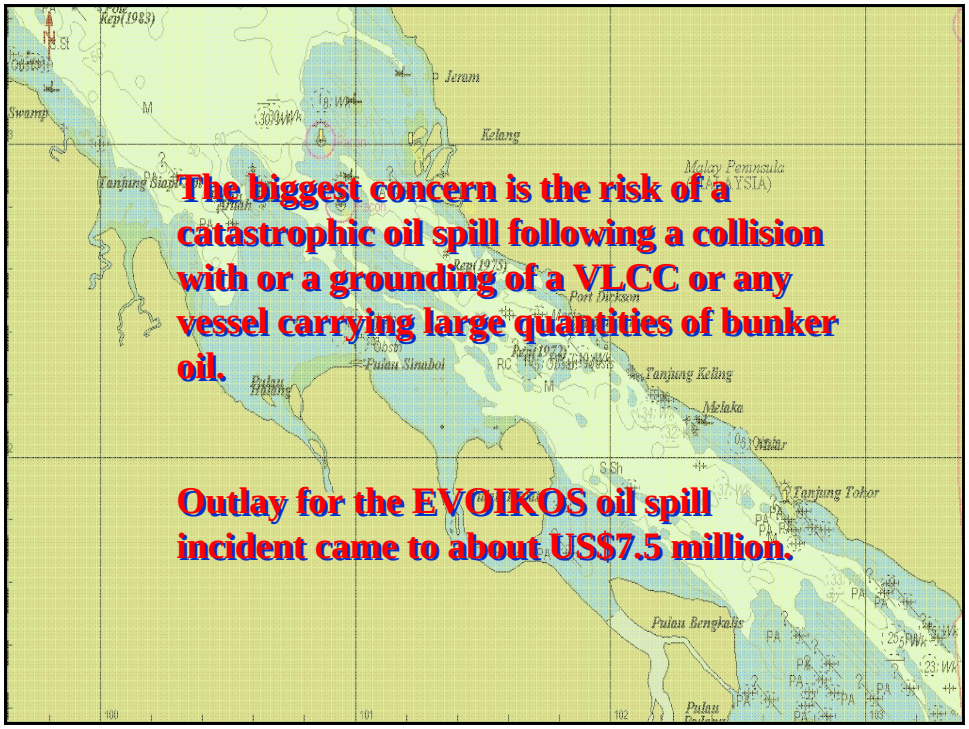
Straits of Malacca and Singapore

- **Coastal and marine natural resources – enormous value to littoral States, contribute to global economy.**
- **Estimated at US$15 billion net economic value**
- **Livelihood of 30 million people living in the vicinity**
- **Zone of biodiversity, rich in marine fauna and flora in a tropical estuarine environment**
- **Stopover points for migratory birds on seasonal transition**

- Some 600 ships use the Straits daily, 250 – 270 vessels transited the Straits annually, over the past 5 years, vessel arrival in Singapore was over 130,000.
- High level of local traffic engaged in trade and fishing across the Straits.
- Provides the shortest route to connect the Far East with the Indian Ocean and the Middle East compared with other routes.
- Straits of Malacca and Singapore is shorter by approximately 1,000 nautical miles, a saving of about three days' steaming if compared with the two alternative routes, i.e., Lombok-Makassar and the Sunda Straits.
- Improving navigational safety – littoral States.
- Marine pollution prevention and navigational aids maintenance – Japan – significant donor.

- Singapore's Vessel Traffic Information Services (VTIS)
- Malaysia also has a radar and vessel traffic monitoring systems and AIS stations
- Mandatory Ship Reporting System, STRAITREP, came into effect on 1 December 1998, requires designated vessels to report, via VHF voice radio communications, to the marine authorities of the littoral States when transiting the Straits of Malacca and Singapore.

- Current maritime safety infrastructure and regulatory mechanisms in place in the Straits have improved the safety of navigation, flow of vessel traffic and the overall management of the Straits as an international sea lane.
- Also there is a substantial volume of cross-Straits traffic among the three littoral States involving trade and fishing.
- There is substantial growth in container throughput in the three largest container ports in Malaysia and Singapore over the past three years.



The biggest concern is the risk of a catastrophic oil spill following a collision with or a grounding of a VLCC or any vessel carrying large quantities of bunker oil.

Outlay for the EVOIKOS oil spill incident came to about US$7.5 million.

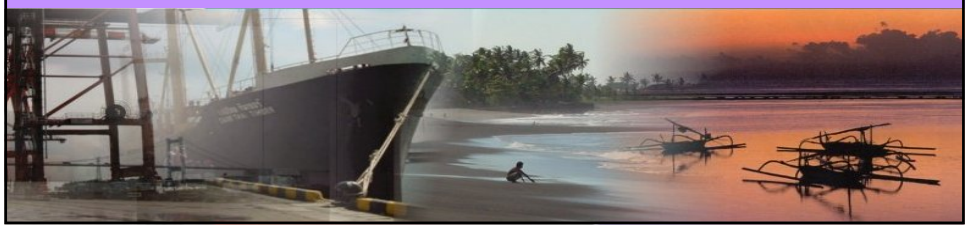
- With the increasing volume of maritime traffic and port development in the Straits, the capacity and condition of the Straits to handle such growth whilst ensuring safe and efficient navigation remains a source of concern.

- Clearly, an innovative approach to improving the management of the maritime traffic and marine environment protection would be required and it is hoped that the **Marine Electronic Highway System (MEH)** will provide a solution to this concern.

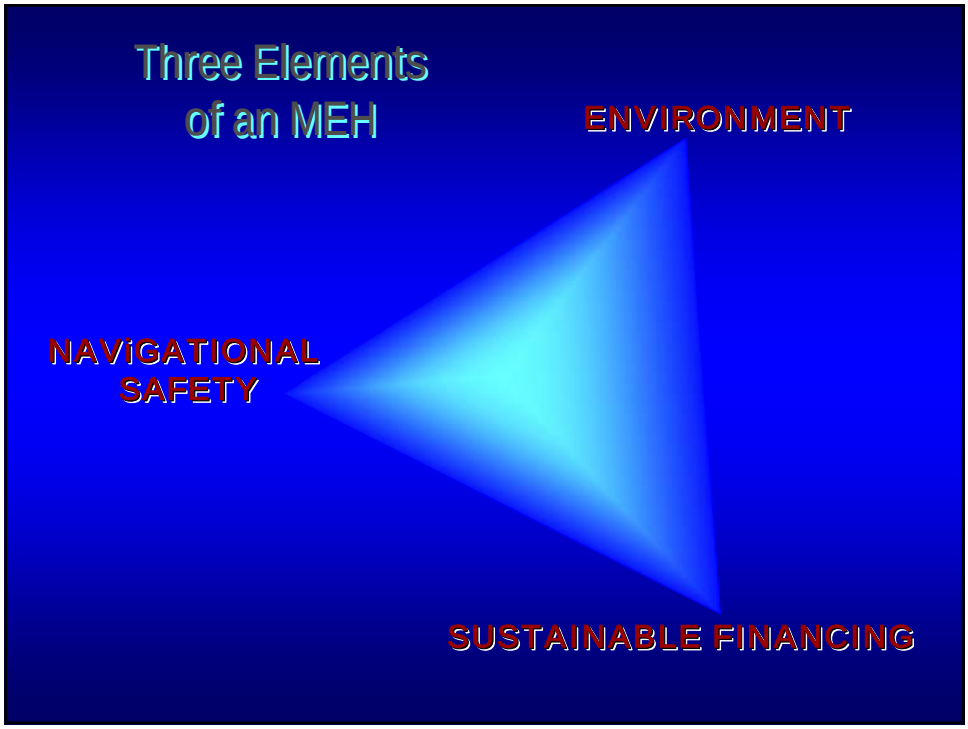
What is an MEH?

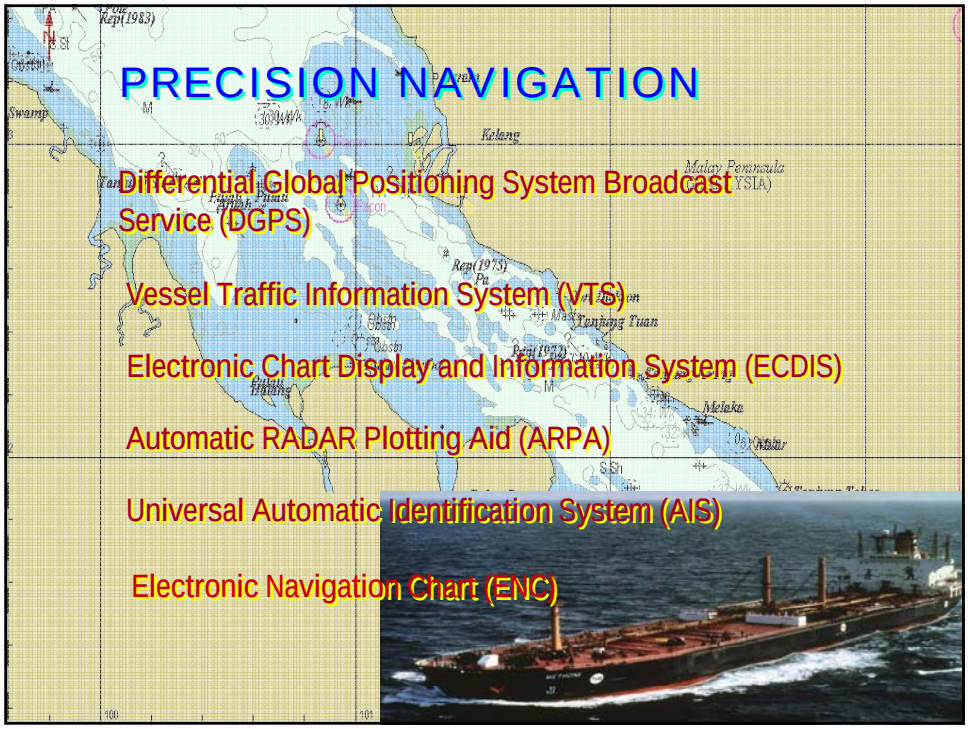
Marine Electronic Highway

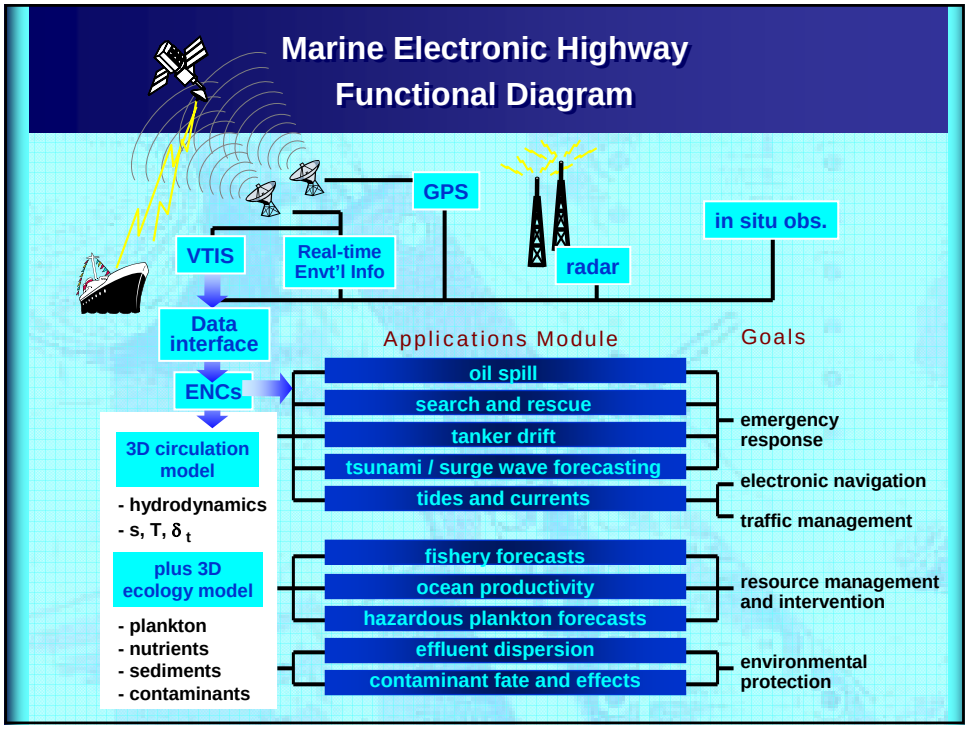
An innovative marine information and infrastructure system that integrates environmental management and protection systems and maritime safety technologies for enhanced maritime services, better navigational safety standards, integrated marine environment protection and sustainable development of the coastal and marine resources.

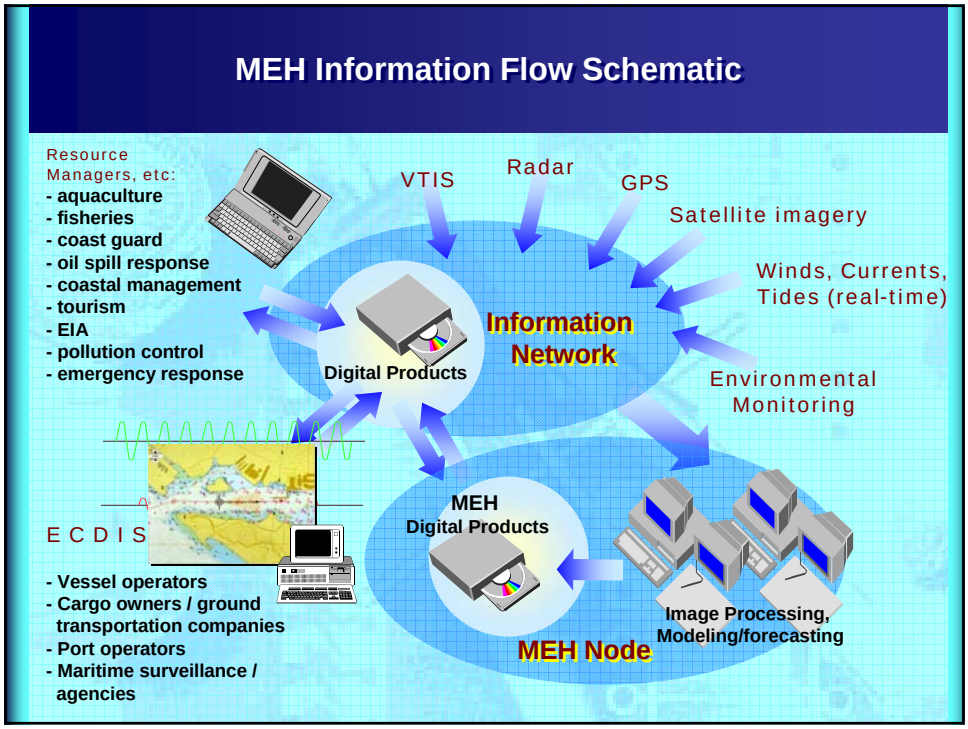


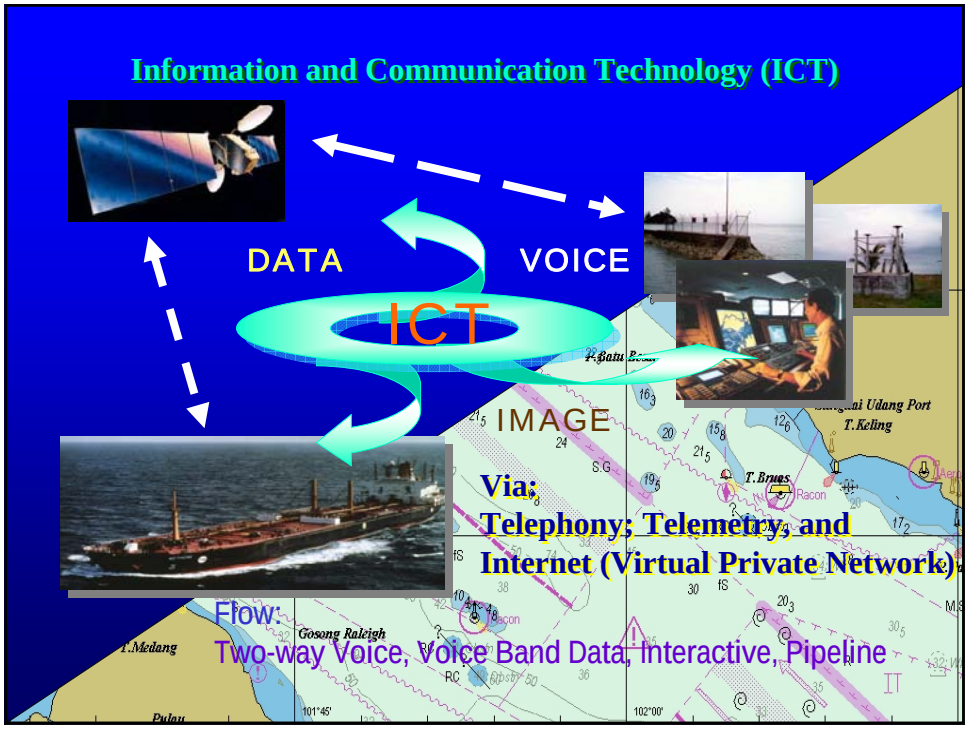
Features of the Marine Electronic Highway


Three Elements
of an MEH
ENVIRONMENT
NAVIGATIONAL
SAFETY
SUSTAINABLE FINANCING


PRECISION NAVIGATION
Differential Global Positioning System Broadcast Service (DGPS)
Vessel Traffic Information System (VTS)
Electronic Chart Display and Information System (ECDIS)
Automatic RADAR Plotting Aid (ARPA)
Universal Automatic Identification System (AIS)
Electronic Navigation Chart (ENC)

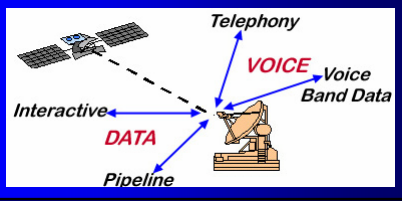

Marine Electronic Highway
Functional Diagram
GPS
VTIS
Real-time Envt'l Info
radar
in situ obs.
Data interface
ENCs
Applications Module
Goals
oil spill
search and rescue
tanker drift
tsunami / surge wave forecasting
tides and currents
emergency response
electronic navigation
traffic management
3D circulation model
- hydrodynamics
- s, T, δ t
plus 3D ecology model
- plankton
- nutrients
- sediments
- contaminants
fishery forecasts
ocean productivity
hazardous plankton forecasts
effluent dispersion
contaminant fate and effects
resource management and intervention
environmental protection


MEH Information Flow Schematic
Resource Managers, etc:
- aquaculture
- fisheries
- coast guard
- oil spill response
- coastal management
- tourism
- EIA
- pollution control
- emergency response
VTIS
Radar
GPS
Satellite imagery
Winds, Currents, Tides (real-time)
Information Network
Digital Products
Environmental Monitoring
MEH Digital Products
Image Processing, Modeling/forecasting
MEH Node
E C D I S
- Vessel operators
- Cargo owners / ground transportation companies
- Port operators
- Maritime surveillance / agencies



Information and Communication Technology

- World Wide Web
- Fixed Line, Wireless, Satellite
- Internet Protocol
- E-mail facility
- Broadband Gateway



SUSTAINABILITY OF THE MEH

Institutional Arrangements:

Project Steering Committee ⇒ Managing Tool

Financing Arrangements:

MEH Fund → MEH Operations and Management

MEH Fund → Environmental Trust Fund

Financial Sustainability of the MEH

- Public Private Sector Partnerships
- Revenues from Products and Services

Considerations to Generate Revenues:

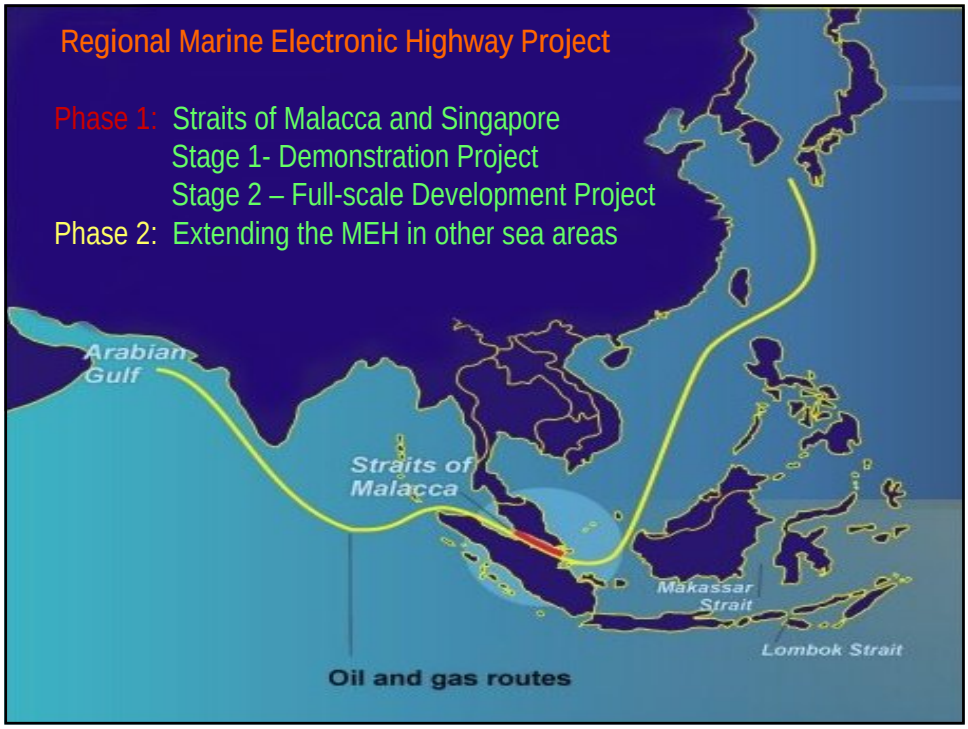
- UNCLOS (Art. 26 and Art. 43)
- SOLAS (Minimum Threshold of NAVAIDS)

Some Benefits of the MEH System

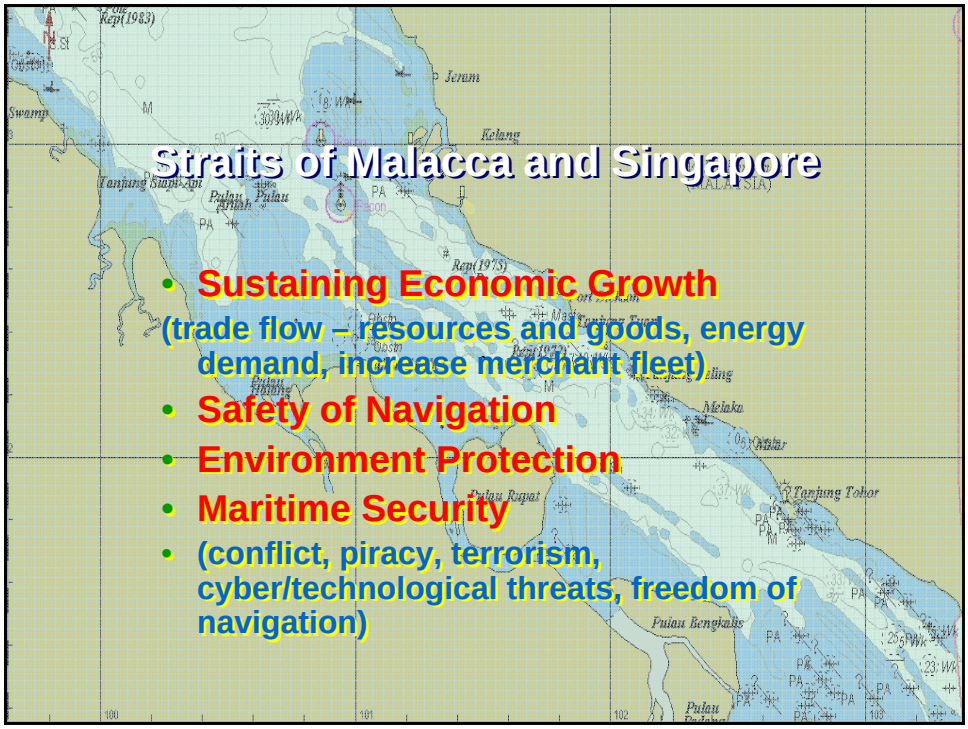
Service	Sectoral Benefits	General Benefits
Enhancement of navigational safety	Reduce risks of groundings & collision, Increase operational efficiencies of vessels	Enhance commercial performance, modernization
Improvement in vessel traffic movement	Efficient vessel traffic management, increase payload	Improve maritime security, lower environment-related damage
Enhance and efficient telecommunications	Enhance precision navigation, improve crew morale, real time access	Efficient working environment, downward pressure on running costs
Strengthen dissemination and use of environmental information	Effective monitoring and forecasting, revenue source, improve enforcement	Enhance commercial production, reduce damage claims, improve compliance

Regional Marine Electronic Highway Project

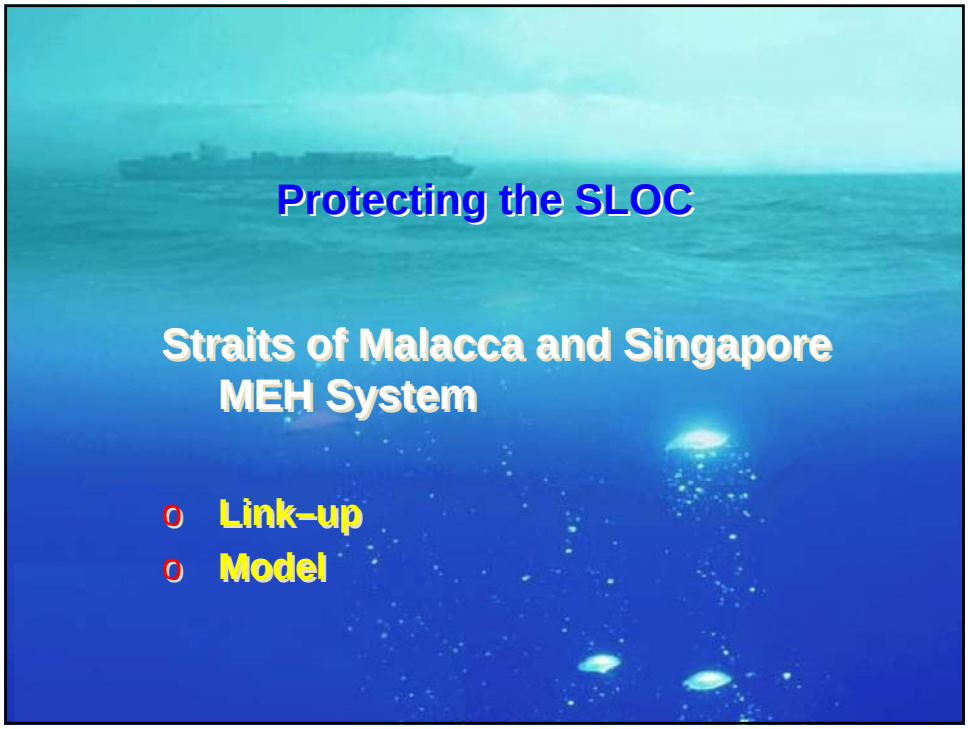
Phase 1: Straits of Malacca and Singapore
Stage 1- Demonstration Project
Stage 2 – Full-scale Development Project
Phase 2: Extending the MEH in other sea areas




IMO
MEH System and Possible
Regional Co-operation to Protect
the SLOC


Straits of Malacca and Singapore
Sustaining Economic Growth
(trade flow – resources and goods, energy demand, increase merchant fleet)
Safety of Navigation
Environment Protection
Maritime Security
(conflict, piracy, terrorism, cyber/technological threats, freedom of navigation)


Protecting the SLOC
MEH System…
• Monitoring and Maritime Traffic Management
• Prevention and Response
• Information Flow and Communication
• Security, Safety, Early Warning
✓ Inter-agency Co-operation and Co-ordination
✓ Multilateral Co-operation and Co-ordination
✓ Plan/Programme
✓ Sustained Funding
✓ Legal and Institutional Arrangements
✓ International Co-operation and Co-ordination


Protecting the SLOC
Straits of Malacca and Singapore
MEH System
o Link–up
o Model


Thank You